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DISTRIBUTED INFORMATION PROCESSING NETWORK

ACTION COMPONENT:

An/ORD

USER COMPONENT:

CIA

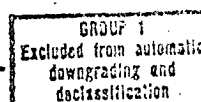
OBJECTIVES:

It is the objective of this project to design, develop, and implement for experimental operation and further testing an agency network for intelligence processing where the major processing power resides in small, low-cost processors located in various operational components. It is planned that these processors shall be designed to be used as stand-alone units and that they shall also be capable of being linked with other smaller processors on a suitable network or they can be linked to a large central processor. Recent developments in computer technology leading to small, low-cost computers of high computing power make this a most important direction for development. An advantage of special importance is the low cost of processing as against high-overhead time-sharing. In addition, stand-alone processors provide important advantages for security control.

DESCRIPTION:

As computer system designers have recently concluded, it is very difficult to design and implement very large multi-access time shared computer systems in which most or all transactions are handled centrally. The problems have been primarily associated with the high cost of the "housekeeping" functions which such systems necessitate and which are essentially nonproductive. This high cost has resulted in some very low efficiency figures; so low that it is not at all obvious at this time that true time-sharing is feasible for very large systems.

As an alternative to the design approach of a monolithic central time-sharing system with remote terminals is becoming apparent that the concept of a distributed processing network may be superior. In such a design the information processing would

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be done at several levels of an hierarcically structured network and tasks would be passed upward only if they could not be handled at the lowest level. Thus highly repetitive, lengthy sequences of processing might be done by the central unit while simple man-machine interactions would be done by peripheral processors. Intermediate stages with increasing power might or might not be provided as circumstances would demand.

This program has as its objective, first the simulation of such networks on the IPRD IBM 360/40 to ascertain the basic parameters of concern, followed by the implementation of test set-ups and the further evaluation of these systems in experimental operation.

In this work we will build upon the work of external research groups and particularly the experience gained by the ARPA network.

Because of the unique processing requirements of user components and because of complex security requirements, each processor requirement will require its particular design development effort. It is not contemplated that a single general purpose stand-alone processor can be made to serve a wide circle of users.

CHRONOLOGY:

Initiated: FY66

Operational: FY69

Operational Evaluation: FY69 and ff.

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